

# 4<sup>th</sup> Grade Science

## **National Standards for Science:**

Content Standard C - Life Science: K-4

## **North Carolina State Standards- Science**

4.L.1:

- a. 4.L.1.1
- b. 4.L.1.2

## **Baleen Vs. Toothed Whales**

**National Park Service**

**Cape Hatteras National Seashore**



*Right Whale, NOAA*

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# Baleen Vs. Toothed Whales:

## Overview

### Description:

Students will:

- Identify warm-blooded mammals (live birth).
- Comprehend that toothed whales can chew their prey/baleen whales cannot.
- Understand the concept of eating abilities of baleen whales.
- Develop an understanding of why Right whales are endangered.

Group Size: 10-36

Time: 30-45 minutes

Location: Classroom

### Overview

This lesson is designed to teach students how to identify whales as warm-blooded animals and to be able to explain why. The teacher will introduce the difference between baleen and toothed whales and increase the students understanding of the feeding method of baleen whales.

### Materials for students

- 2 dishpans or tubs filled  $\frac{1}{2}$  way with water
- At least a 6 oz cup
- One bag of rice to pour into one tub of water... rice represents Krill in the ocean (in the other tub just water to represent the ocean)
- Pictures or samples of some of their babies
- Face of a person drawn as large as you can on a sheet of poster board (see sample)
- At least two other types of sea animals to represent what a toothed whale might eat.
- Attachment entitled Whales sign.pdf, with facts about the Right whale on it
- At least one pre-made card of "fake" baleen (see directions below and picture attached)

**2 days prior to starting:** To make fake baleen, cut a piece of poster board about 5"x8". Glue down pine straw collected beforehand, on one edge of the poster board creating a very thick "broom-like" appearance. When dry, reinforce with tape to hold everything in place.

### Assessment:

Students will be able to:

- Describe 2 things that make an animal warm-blooded.
- List at least 3 things that baleen and toothed whales eat.
- Explain the main difference between toothed and baleen whales.

## **National Standards**

### **Science Standards:**

Content Standard C - Life Science: K-4

- The characteristics of organisms
- Life cycles of organisms
- Organisms and the environment

### **North Carolina State Standards**

4.L.1 Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.

1. 4.L.1.1 Give examples of changes in an organism's environment that are beneficial to it and some that are harmful.
2. 4.L.1.2 Explain how animals meet their needs by using behaviors in response to information received from the environment.

## Activities

### Activity #1

Introduce whales as warm-blooded mammals. Here is a suggested format, or tell about any information you wish. The books listed in the reference section can provide more information.

- *We are going to talk about whales. Tell me what you know about whales. (Response time) Did you know that whales are warm-blooded mammals?*
  - *That means that their babies are born alive.*
  - *The babies drink milk from their mother.*
  - *They breathe air with lungs just like ours.*
  - *They look just like their mommy when they are born too!*
- *Does that make you (humans) warm-blooded or cold-blooded? (Response time)*
- *Do you look like your mommy with one head, two arms, two legs? (Response time) You're not born with 3 eyes and one goes away, are you?*
- *Are you hatched from an egg while your mommy sits on a nest or are you born alive? (Response time)*
- *Whales have lungs and a nose and they need to breathe air just like we do.*
- *That means that while they are swimming they have to come up for air. Discuss length of time a whale can hold their breath, about 10 minutes.*
- *Compare to humans.*
- *Establish that warm-blooded mammals.....*
  - 1) *give live birth*
  - 2) *drink milk from their mothers*
  - 3) *have lungs and need air to breathe.*

### Body of Program:

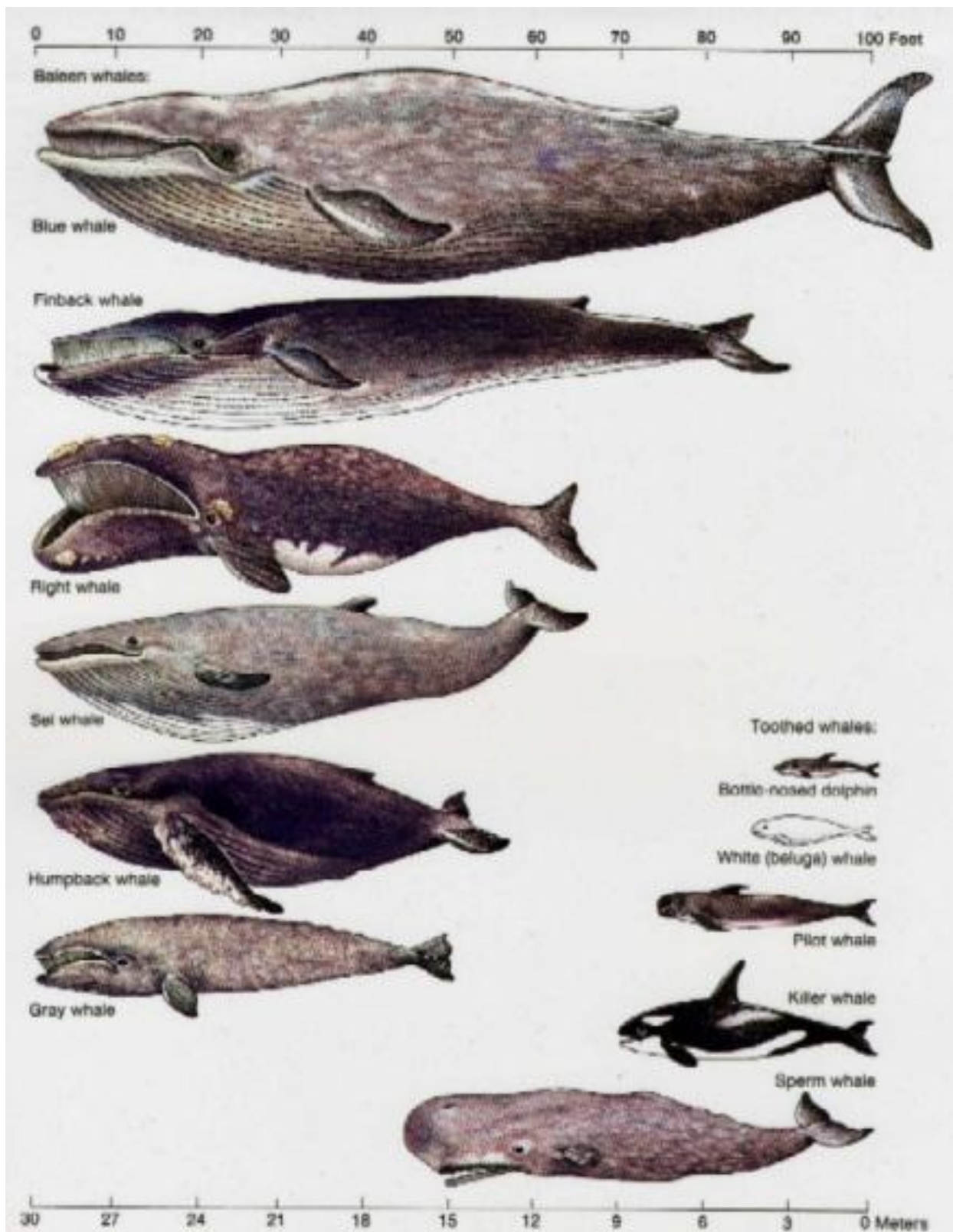
*Let me ask you a question. What do you do when you are hungry? (Response time) Whales can't ask for a snack, or....when is dinner?*

*They have to eat when food is available. Did you know that there are two kinds of whales? (Response time)*

*Whales that have teeth and whales that have baleen.*

*We all know what teeth are, but what is baleen.*

*(Describe....stringy like, hanging down from jaw, as many as 390 sheets of baleen on each side of jaw)*



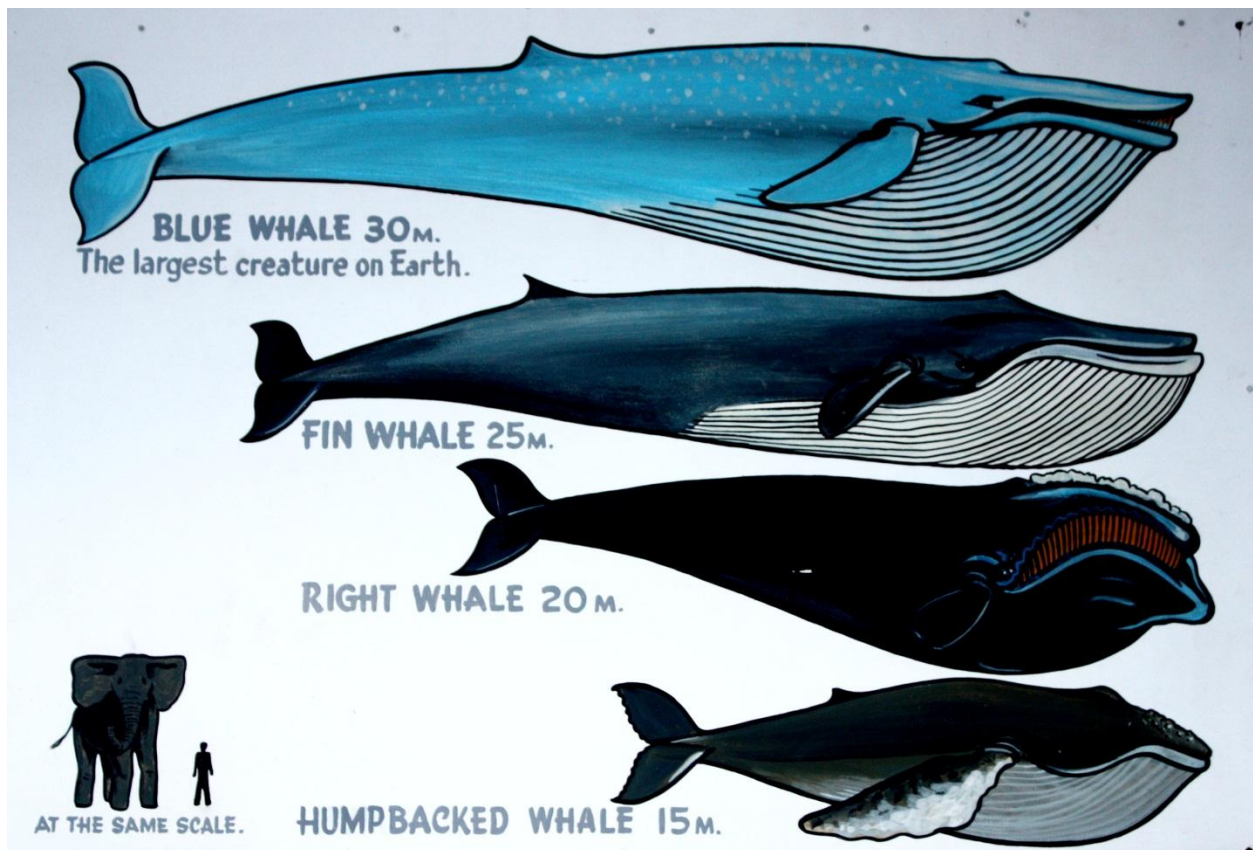
Whales of the World, <http://faculty.scf.edu>



## Transition/Review:

Bring out pictures of whales or toy whales and have “helpers” hold whales as you introduce them and together decide if they have teeth or baleen. Name the species and show how the babies that you have look like the parents.

- After sorting is over, pull out some of the sea creatures (sea turtles, stingray, jellyfish) and demonstrate how toothed whales can eat such things but a baleen whale can't...**NO TEETH!!!**
- Continue to describe what a baleen whale eats....krill and plankton. Krill can be as big as two inches or so small, it can only be seen with a microscope. How does this big whale eat it? (Response time)
- He takes a big bite just like as if it was “sea soup”. Show grooves under their chin; explain how their jaw opens up like an accordion.
- Use your arms to demonstrate how wide our mouth would open if it did the same thing
- Explain how baleen whales open up their mouth, take a big mouthful of water, close their mouth, and expel or shoot the water back out the baleen. All the little plankton get caught in the stringy baleen. Then all the whale has to do is swallow it down.
- Baleen can be as long as six feet, and a Right whale has as many as 390 plates on each side of their mouth.
- Thank volunteers who held the whales.



Baleen Whales, <http://returntoaus.files.wordpress.com>

Draw attention to or bring up the Wale sign pdf. attachment. Then refer to the Right whale and finally the pre drawn head of a person.

- *Do you know how the Right whale got its name? (Response time) Why didn't they call it a "Left" whale or a "Wrong" whale? (Response time)*
  - *Reasons: They are slow swimmers and VERY easy to kill.*
  - *When you do kill them, they float on top of the water.*
  - *Other whales sink, so they have to work very fast to tie them onto the boat.*
  - *Right whales have lots of bubbler which makes good oil that they can sell for lots of money. Even the baleen is valuable.*
  - *All of these facts make the Right whale the "RIGHT" one for the sailors to kill.*
  - *It's sad though, because that is why this whale is on the "Endangered Species List". There are only about 300 to 350 left in the world today.*
  - *So today, it is against the law to kill a Right whale.*
- *Every year at least one Right whale gets stranded on the beaches of Cape Hatteras National Seashore. Sometimes they are sick, sometimes they just need help finding their way back to deeper waters.*
- *The Right whale's head is about 1/3 of the total length of his body. (Refer to the picture of the Right whale)*
  - *Just think a minute; if my head were 1/3 the length of my body, this is what I'd look like. (Hold up ranger head and wait for response)*
  - *Wouldn't I look funny??!! Look under the belly of the Right whale. They do not have any ridges that the other baleen whales have. Look at the shape of their mouth.*
  - *We call this a "bowhead". It reminds me of how my legs feel when I get off a horse, (demonstrate bow legs). (Refer back to sign)*
  - *Look at his mouth, it starts way back here and goes up very high near his eye, then it dips way back down in front and gets back up on the other side and pretty far back.*
  - *That's why they call him a "bowhead." He has to have such a big mouth because he has to open it so wide to take a big scoop of the krill or plankton. He needs to eat a ton of krill every time he eats.*

You may refer to the migration pattern of the whale as shown on the whale pdf. attachment. You could also mention mating season, and the fact that they gain a lot of weight while they are swimming in the summer ocean if you wish.

## **Activity #2:**

- *Pick two new helpers,*
  - *One to represent the Right whale and one to be the Krill in the ocean.*
  - *Move two tubs in view or up front so helpers can get to them.*
  - *Hand the card of pretend baleen to the "whale" helper. Give the cup to the "krill" helper.*
  - *Remember to have them stand to the side so as to not block the view of others.*
- *Revisit that the baleen hangs down from the jaws of their mouth, use card to show.*



- *Restate how the whale takes in a big gulp of water, then expels it back through the baleen, allowing for the krill to be caught then swallowed.*
- *Explain that this is what we are going to try to demonstrate now.*
- *Whale helper wisps the fake baleen back and forth around in the water to simulate the whale swimming. Krill helper stirs up the water, then takes the cup and picks up as much “krill” and water as possible and pours it over the fake baleen (slightly tilted.) Krill helper may do it twice.*
- *Notice how the water runs straight through the baleen. Only the krill stays behind. Now all the whale has to do is swallow his dinner!!*

### **Conclusion:**

- 1) *Discuss why life might be hard for Baleen Whales.*
  - a. *They can only eat tiny particles of food, and they are BIG whales, so they have to eat a lot of plankton.*
  - b. *There are not many left, so it is hard for Right Whales to have babies.*
  - c. *The more the ocean becomes polluted, the less plankton there will be, and the less food the Right Whales, and other baleen whales, will have.*
- 2) *Discuss why it is important to know about endangered/threatened species.*
  - a. *The more we know, the more we can to not make it harder on them.*
  - b. *The more research that is done, the more we know about how to help them.*

## **Supplemental Information**

### **Reference/Supplemental Information:**

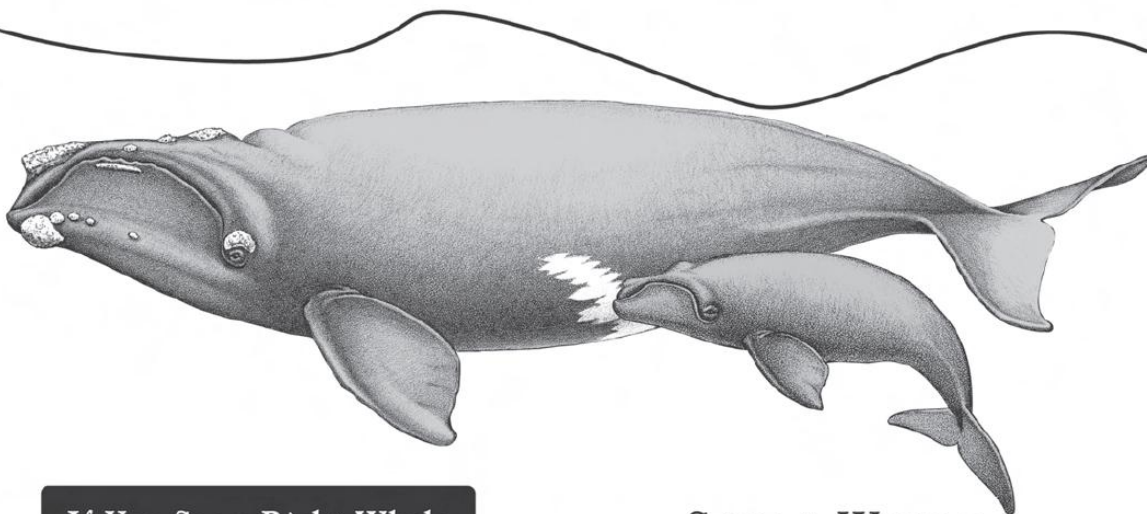
1. Whales and Dolphins IN QUESTION; James G. Mead and Joy P. Gold; Smithsonian Institution Press 2002
2. The Sierra Club Handbook of Whales and Dolphins; Stephen Leatherwood and Randall R. Reeves; Sierra Club Books 1983
3. <http://www.howstuffworks.com/zoology/marine-life/baleen-whale.htm>
4. <http://animal.discovery.com/tv-shows/whale-wars/about-whaling/whales-whaling-right-whale.htm>
5. <http://animal.discovery.com/mammals/whale-info5.htm>
6. [http://en.wikipedia.org/wiki/Baleen\\_whale](http://en.wikipedia.org/wiki/Baleen_whale)
7. <http://www.seaworld.org/animal-info/info-books/baleen/index.htm>

### **Supplemental Information: Attached**

- 1) Picture of home-made baleen
- 2) Pdf Attachment of Right whale sign (information)
- 3) Picture of persons head

# Help Protect North Atlantic Right Whales

Only about 300–350 North Atlantic right whales remain. They are one of the most endangered of all large whales. Right whales migrate between their feeding grounds in the northeastern United States and their only known calving area, which is off the southeastern United States. They are usually seen here between December and March.



## If You See a Right Whale

- Operate vessel at slowest safe speed. Remain alert for other whales in the area.
- Stay at least 500 yards away from right whales. (50 CFR 224.103(c))
- If whales approach you, move slowly away.



## SAVE A WHALE

Immediately report injured, dead or entangled right whales to the U.S. Coast Guard by VHF Ch 16.



## North Atlantic Right Whale Identifying Characteristics

Adult Length: 55 feet • Weight: 55 tons



Notched Tail



White Markings  
on Head



V-shaped Blow



Blunt Shaped  
Flippers



No Dorsal Fin

